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10/604,860	08/22/2003	Ming-Yang Chao	MTKP0031USA	1859

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EXAMINER	
GUPTA, PARUL H	

ART UNIT	PAPER NUMBER
2627	

NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/604,860	CHAO, MING-YANG	
	Examiner	Art Unit	
	Parul Gupta	2627	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *6/20/07*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-9 and 11-24* is/are rejected.

7)☒ Claim(s) *10* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-24 are pending for examination as interpreted by the examiner. No IDS was considered for this application. The amendment and arguments filed on 6/20/07 were considered.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

2. Claims 1, 2, 11, 12, and 21-24 are rejected under 35 U.S.C. 102(a) as being anticipated by Asada et al., US Patent 6,483,791.

Regarding claim 1, Asada et al. discloses a method adapted to an optical storage device for writing data to an optical storage medium ("recording medium" of column 2, line 39), the optical storage device having a memory (element 11 of figure 30) and a pickup (comprising of elements 24, 25, and 27 of figure 30), the memory storing a predetermined plurality of different sets of write strategy parameters (figure 17), the method comprising: providing an RLL modulation waveform (NRZI as given in column 15, line 12 of the reference is a format for noting RLL codes) to the optical storage device (element 8 of figure 30 receives the NRZI waveform), the RLL modulation waveform including a previous land section (figure 30, "S(n-1)"), a current pit section (figure 30, "M(n)"), and a next land section (figure 30, "S(n)" and see column 15, lines 8-13); choosing a set of write strategy parameters from the plurality of sets of write

strategy parameters stored in the memory according to waveform lengths of the previous land section, the current pit section, and the next land section (column 15, lines 14-23); generating a write time waveform according to the chosen set of write strategy parameters (column 15, lines 13-21); and driving the pickup with the write time waveform, so as to write data corresponding to the RLL modulation waveform to the optical storage medium (column 15, lines 21-41); wherein there is a delay from a trailing edge of a last pulse of the write time waveform to a position the write time waveform switches back to an erase power state (shown in figure 36).

Regarding claim 2, Asada et al. discloses in figure 36 the waveform utilizing the method wherein the RLL modulation waveform (NRZI as given in column 15, line 12 of the reference is a format for noting RLL codes) has a base period (T), the method further comprising: setting the write time waveform to the erase power state (Per) before the optical storage device writes data; and setting the write time waveform to a bias power state (Pb) and inserting a plurality of pulses (multi pulses) into the write time waveform when the optical storage device writes data ("mark" portion of "recording data" waveform), and each pulse switching the write time waveform from the bias power state (Pb) to a write power state (Pwr).

Regarding claim 11, Asada et al. discloses in figure 36 the method of claim 2 wherein a delay from a trailing edge of any but the first and the last pulses in the write time waveform to a leading edge of the next pulse is equal to a duration twice the base period subtracting a length of the pulse. This is established by the waveform with a duty

cycle of 50% as this serves the same purpose as a space equal to twice the period, minus one period of a pulse.

Regarding claim 12, Asada et al. teaches the method of claim 2 wherein waveform lengths of the previous land section, the current pit section, and the next land section are all multiples of the base period (T of column 6, lines 6-8), ranging from three times the base period to eleven times the base period (column 6, lines 2-13).

Regarding claim 21, Asada et al. discloses a method adapted to an optical storage device for writing data to an optical storage medium ("recording medium" of column 2, line 39), the optical storage device having a memory (element 11 of figure 30) and a pickup (comprising of elements 24, 25, and 27 of figure 30), the method comprising: storing a predetermined plurality of different sets of write strategy parameters in the memory (figure 17) prior to receiving an RLL (NRZI as given in column 15, line 12 of the reference is a format for noting RLL codes) modulation waveform (already given to be stored in memory and then outputted based on various factors in column 13, lines 20-37), the write strategy parameters including a plurality of sets of repeating pulse parameters ("patterns" as explained in column 7, line 63 to column 8, line 2), each set of repeating pulse parameters having a plurality of repeating pulse parameters, the repeating pulse parameters representing pulse lengths of all but first and last pulses (column 6, line 66 to column 7, line 14); receiving the RLL modulation waveform (element 8 of figure 30 receives the NRZI waveform), the RLL modulation waveform including a previous land section (figure 30, "S(n-1)"), a current pit section (figure 30, "M(n)"), and a next land section (figure 30, "S(n)" and see column 15,

lines 8-13); choosing a set of write strategy parameters from the plurality of sets of write strategy parameters stored in the memory according to waveform lengths of the previous land section, the current pit section, and the next land section (column 15, lines 14-23); generating a write time waveform according to the chosen set of write strategy parameters (column 15, lines 13-21); and driving the pickup with the write time waveform, so as to write data corresponding to the RLL modulation waveform to the optical storage medium (column 15, lines 21-41).

Regarding claim 22, Asada et al. discloses the method of claim 21 wherein a length between leading edges of any two consecutive pulses among all but the first and the last pulses is equal to twice the length of a base period (the pulse beginning in periods (4) and (5) of figure 36), the method further comprising: choosing a set of repeating pulse parameters from the sets of repeating pulse parameters according to a waveform length of the current pit section (column 15, lines 14-23).

Regarding claim 23, Asada et al. the method of claim 22 wherein the repeating pulse parameters in the same set of repeating pulse parameters are equal to one another (shown in figure 17 in different sections).

Regarding claim 24, Asada et al. discloses the method of claim 22 wherein at least two of the repeating pulse parameters in the same set of repeating pulse parameters are not equal to one another (shown in figure 17 within the same section).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

3. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. as applied to claim 2 above, and further in view of Furumiya et al., US Patent 6,791,926.

Asada et al. teaches the limitations of claim 2 of a write time waveform with certain specifications generated with the use of the waveform lengths of the current pit section and the surrounding land sections.

Asada et al. does not but Furumiya et al. teaches in figures 2 and 3 the method wherein the write strategy parameters include a plurality of first parameters (amount given on the left in the middle of each block in figure 3) and a plurality of second parameters (amount given on the right in the middle of each block in figure 3), each of the first parameter representing a delay from a leading edge of the current pit section to a leading edge of a first pulse of the write time waveform, each of the second parameter representing a delay from a trailing edge of the first pulse of the write time waveform to a leading edge of a second pulse of the write time waveform (both parameters are shown in figure 3 and explained in column 7, lines 33-42), the method further comprising: choosing a first parameter from the plurality of first parameters according to waveform lengths of the previous land section and/or the current pit section; and choosing a second parameter from the plurality of second parameters according to waveform lengths of the previous land section and/or the current pit section (column 7, lines 52-54). Each of the recording pulses of the first two columns of figure three

contains multiple pulses. Thus, the space between the pulses is the given delay. As the recording pulse is determined based on the different land and pit sections, the delays are also given in the same way.

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the parameters as taught by Furumiya et al. to write data into the optical storage medium in the system of Asada et al. The motivation would be to reduce the effects of variation in the characteristics of a writable optical disc and recording and reproducing apparatus and to try to achieve good recording characteristics even when there is a difference between the optical disc characteristics and standard recording pulse parameters of a writable optical disc, thus reducing the number of read/write operations and shortening the required time (column 2, lines 29-54).

4. Claims 4-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. in view of Furumiya et al. as applied to claim 3 above, and further in view of Park, US Patent 6,628,594.

Asada et al. in view of Furumiya et al. teaches the limitations of claim 3 of a method of choosing parameters of the write strategy.

Regarding claim 4, Asada et al. in view of Furumiya et al. does not but Park teaches in figure 9 the method wherein a trailing edge of the first pulse of the write time waveform (waveform b) is in alignment with a position twice the base period posterior to a leading edge of the current pit section (waveform a). As each vertical line is equal to 0.5T, the trailing edge of the waveform is in proper alignment.

Regarding claim 5, Park teaches in figure 9 the method wherein a length of the first pulse of the write time waveform (waveform b) is equal to a length of twice the base period subtracting the chosen first parameter (in this case, 0.5T).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of the given alignments as taught by Park into the system of Asada et al. in view of Furumiya et al. The motivation would be to provide an optimal recording with little jitter (column 7, lines 41-52 of Park).

5. Claims 6-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. as applied to claim 2 above, and further in view of Shoji et al.

Asada et al. teaches the limitations of claim 2 of a write time waveform with certain specifications generated with the use of the waveform lengths of the current pit section and the surrounding land sections.

Regarding claim 6, Asada et al. does not but Shoji et al. teaches the method wherein the write strategy parameters include a plurality of sets of repeating pulse parameters, each set of repeating pulse parameters having a plurality of repeating pulse parameters, the repeating pulse parameters representing pulse lengths of all but the first and the last pulses (done by the different parameters of the drive pulses of column 5, lines 14-22), a length between leading edges of any two consecutive pulses among all but the first and the last pulses being equal to twice the length of the base period (shown in figure 3), the method further comprising: choosing a set of repeating pulse parameters from the sets of repeating pulse parameters according to a waveform length of the current pit section (column 5, lines 19-28).

Regarding claim 7, Shoji et al. teaches the method of claim 6 wherein the repeating pulse parameters in the same set of repeating pulse parameters (done by the different parameters of the drive pulses of column 5, lines 14-22) are equal to one another (done where marks shown in figure 2 are the same size).

Regarding claim 8, Shoji et al. teaches the method of claim 6 wherein the repeating pulse parameters in the same set of repeating pulse parameters (done by the different parameters of the drive pulses of column 5, lines 14-22) are not necessarily equal to one another (done where marks shown in figure 2 are not the same size).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method as taught by Shoji et al. to choose the write strategy parameters in the system of Asada et al. The motivation would be to provide a data recording medium wherewith optimized recording is possible even with disks of different types, including disk structure and recording film composition (column 3, lines 6-10 of Shoji et al.).

6. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. as applied to claim 2 above, and further in view of Shoji et al. and Nakajo, US Patent 6,781,937.

Asada et al. teaches the limitations of claim 2 of a write time waveform with certain specifications generated with the use of the waveform lengths of the current pit section and the surrounding land sections. Asada et al. teaches the method comprising: choosing a third parameter from the plurality of third parameters according to waveform lengths of the current pit section and the next land section; choosing a fourth parameter

from the plurality of fourth parameters according to the waveform length of the current pit section; and choosing a fifth parameter from the plurality of fifth parameters according to the waveform lengths of the current pit section and the next land section.

Asada et al. does not but Shoji et al. teaches in figure 20 the method wherein the write strategy parameters include a plurality of third parameters and a plurality of fourth parameters, each third parameter representing a delay from a position twice the base period prior to the trailing edge of the current pit section to a leading edge of a last pulse of the write time waveform (space from the time interval to TL), each fourth parameter representing a period of the last pulse of the write time pulse (TL). As these spaces are variable, they represent a plurality of values each.

Asada et al. does not but Nakajo teaches the method werein the write strategy parameters include a plurality of third parameters, each fifth parameter representing a delay from a position one base period prior to the trailing edge of the current pit section to a position the write time waveform switches back to the erase power state (ΔTb(mt) of figure 7).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the parameters as taught by Shoji et al. and Nakajo in the method of choosing the write strategy parameters in the system of Asada et al. The motivation would be to provide a data recording medium wherewith optimized recording is possible even with disks of different types, including disk structure and recording film composition (column 3, lines 6-10 of Shoji et al.) and to which achieve improved quality,

such as less jitter and deviation and a lower error rate, of recording signals in high-speed recording (column 3, lines 16-22 of Nakajo).

7. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. in view of Furumiya et al. as applied to claim 3 above, and further in view of Fuji, US Patent 5,537,381.

Asada et al. in view of Furumiya et al. teaches the limitations of claim 3 of a method of choosing parameters of the write strategy.

Asada et al. in view of Furumiya et al. does not but Fuji et al. teaches in figure 13 the method wherein levels of the erase power state (0), the bias power state (Pb), and the write power state (Pw) are predetermined values, and do not vary with different RLL modulation waveforms (explained in column 14, lines 13-21).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method as taught by Fuji in the system of Asada et al. in view of Furumiya et al. The motivation would be to set an optimum value to a plurality of variables even when an ambient temperature and recording sensitivity of a recording medium change (column 3, lines 18-23).

8. Claims 14-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. as applied to claim 1 above, and further in view of Park, US Patent 6,628,594.

Regarding claim 14, Park teaches the method of claim 1 being adapted to a CD burner (column 7, lines 37-41).

Regarding claim 15, Park teaches the method of claim 14 being capable of writing data onto a CD-RW (column 7, lines 37-41).

Regarding claim 16, Park teaches the method of claim 1 being adapted to a DVD burner (column 7, lines 37-41).

Regarding claim 17, Park teaches the method of claim 16 being capable of writing data onto a DVD-R (column 7, lines 37-41).

Regarding claim 18, Park teaches the method of claim 16 being capable of writing data onto a DVD-RW (column 7, lines 37-41).

It would have been obvious to one of ordinary skill in the art at the time of the invention to include the concept of the making the method adaptable to different media as taught by Park into the system of Asada et al. The motivation would be to allow compatibility with various types of media (column 7, lines 35-41 of Park).

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. as applied to claim 1 above, and further in view of Hayashi, US Patent 5,606,540.

Asada et al. teaches the limitations of claim 1 of a write time waveform generated with the use of the waveform lengths of the current pit section and the surrounding land sections.

Asada et al. does not but Hayashi teaches the method wherein the RLL modulation waveform is an eight-to-fourteen modulation waveform (column 14, lines 28-39).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method as taught by Hayashi into the system of Asada et al. The

motivation would be to be compatible with read information corresponding to a recorded signal having a run length equal to or longer than 4T, excluding 3T (column 14, lines 35-39 of Hayashi).

10. Claim 20 is rejected under 35 U.S.C. 103(a) as being unpatentable over Asada et al. in view of Furumiya et al. as applied to claim 3 above, and further in view of Shoji et al., US Patent 6,233,211.

Asada et al. in view of Furumiya et al. teaches the limitations of claim 3 of a method of choosing parameters of the write strategy.

Regarding claim 20, Shoji et al. teaches the method wherein a trailing edge of the first pulse of the write time waveform is in alignment with a position of a leading edge of the current pit section (shown in figure 5 where the write time waveform is represented by the reproduction signal and the current pit section is represented by the mark).

It would have been obvious to one of ordinary skill in the art at the time of the invention to use the method as taught by Shoji et al. to write data into the optical storage medium in the system of Asada et al. in view of Furumiya et al. in order to provide a data recording medium wherewith optimized recording is possible even with disks of different types, including disk structure and recording film composition (column 3, lines 6-10 of Shoji et al.).

Allowable Subject Matter

11. Claim 10 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims. None of the prior art of record, taken individually or in combination teach the given specifications for the parameters. The closest prior art is Nobukuni et al., US Patent 6,411,579. Nobukuni et al. teaches in figure 11 (a) and 11 (b) the method of claim 10 wherein a delay from a trailing edge of the last pulse of the write time waveform to a position the write time waveform switches back to the erase power state (0.5T) is equal to the chosen fifth parameter (T) plus a duration of one base period (T) subtracting the chosen third parameter (T) subtracting the chosen fourth parameter (0.5T). However, the parameters are not the same as given by the applicant.

Response to Arguments

12. Applicant's arguments with respect to claims 1, 2, 4, and 5 have been considered but are not persuasive.

Regarding claim 1, applicant contends that the write waveform utilizing a 1T write strategy of Asada is not optimal. The examiner disagrees. The claims read on the reference as written.

The applicant also contends the prior art does not teach "a plurality of sets of repeating pulse parameters, each set of repeating pulse parameters having a plurality of repeating pulse parameters, the repeating pulse parameters representing pulse lengths of all but the first and the last pulses". The examiner disagrees. The limitations are well known in the art as evidenced by the multiple references that teach this concept. Asada et al. discloses this concept as given in the rejection to claim 21 given above and Shoji teaches this concept as given in the rejection to claim 6 given above. The applicant contends that Shoji teaches a single parameter and not repeating parameters.

However, Shoji teaches many parameters including the reference period and pulse position , which mean that Shoji teaches more than a single parameter.

Conclusions

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Parul Gupta whose telephone number is 571-272-5260. The examiner can normally be reached on Monday through Thursday, from 9:30 AM to 7 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on 571-272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

PHG
8/28/07

WAYNE YOUNG
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